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facility

BEFORE THE MONTANA DEPARTMENT OF
NATURAL RESOURCES AND CONSERVATION

**AN APPLICATION FOR A PERMIT
TO SITE A MAJOR FACILITY:**

**A 100-KV TRANSMISSION LINE FROM
GLENGARRY TO JUDITH GAP AND
ASSOCIATED SUBSTATION FACILITIES,
CENTRAL MONTANA**

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SUPPLEMENTAL REPORT NO. 3:

**CENTRAL MONTANA TRANSMISSION
LINE STUDY: PHASE I
JANUARY 1982
(WESTERN ANALYSIS, INC., HELENA, MT)**

SEE NOTES ON PAGE 7 AND PAGE 16

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THE MONTANA POWER COMPANY
40 EAST BROADWAY
BUTTE, MONTANA 59701

CENTRAL MONTANA
TRANSMISSION LINE STUDY

Phase I

Submitted to:

THE MONTANA POWER COMPANY

January 1982



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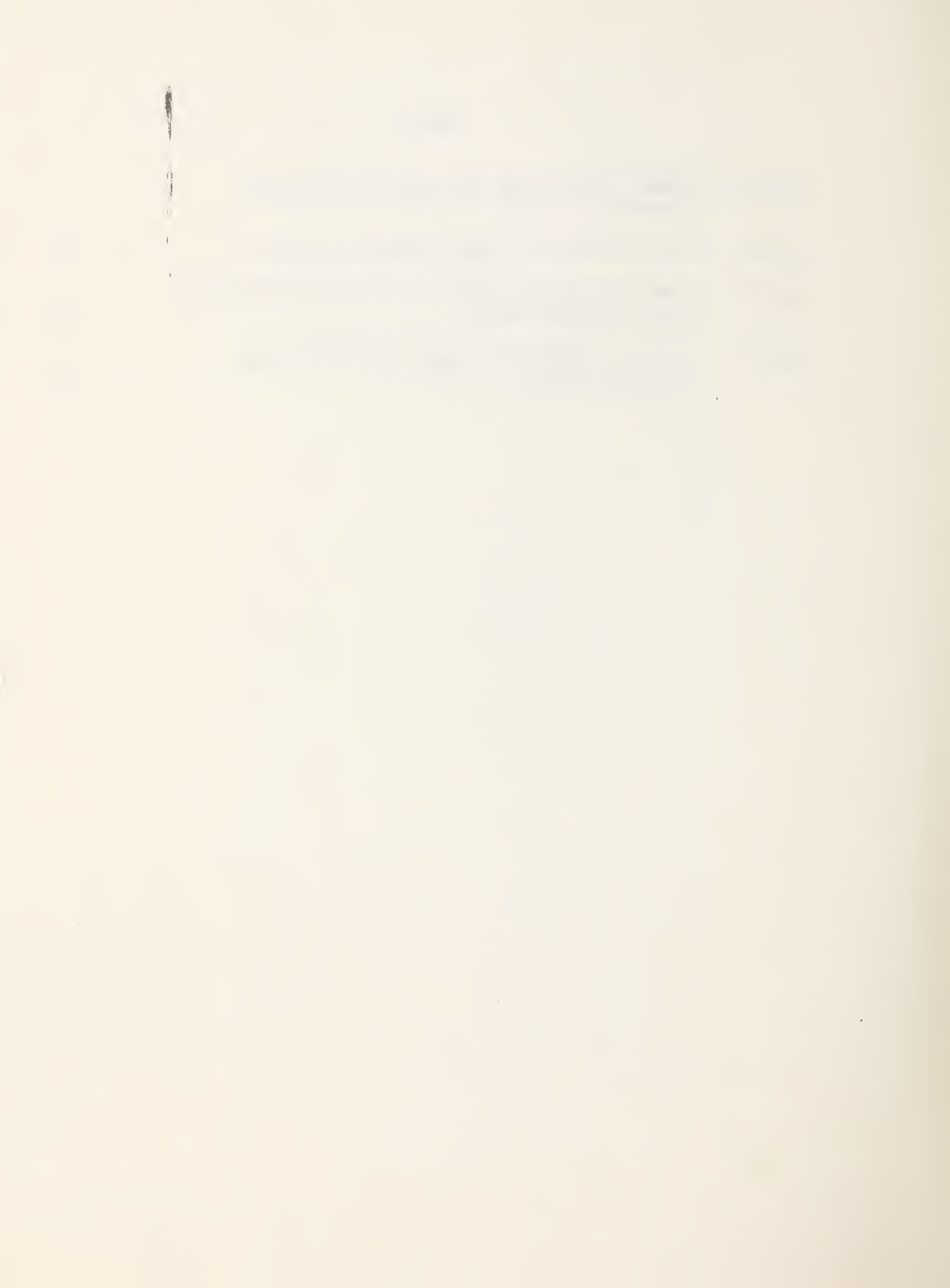
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CENTRAL MONTANA TRANSMISSION LINE STUDY

Phase 1

INTRODUCTION

The Montana Power Company (MPC) has proposed to build a 100-kV transmission line in the vicinity of Lewistown, Montana. The purpose of the proposed facility is to provide adequate electrical service to the Lewistown area, including the customers of MPC and the Fergus Rural Electric Cooperative. The new transmission line will connect the existing MPC substation at Glengarry, southwest of Lewistown, either with the Billings-Great Falls 230-kV line west of Lewistown, or with the existing MPC substation at Roundup. MPC has designated the following four options for providing additional service to the Glengarry substation:

- Option 1. A line from the existing MPC substation at Roundup, Montana;
- Option 2. A line from a new substation southwest of Stanford, Montana;
- Option 3. A line from a new substation northwest of Utica, Montana;
- Option 4. A line from a new substation southwest of Judith Gap, Montana.

Project Objectives

For the first phase of the socioeconomic study, Western Analysis, Inc., identified socioeconomic factors that could be adversely affected by construction or operation of the proposed transmission line. Based on review and analysis of these factors, specific areas are recommended for exclusion or avoidance when MPC selects a preferred corridor.

Project Scope of Work

Social, economic, and recreational resources in the area subject to impact were described and mapped, and landowners in the area were interviewed regarding their concerns about transmission line construction and operation.

Report Contents and Format

The methods used to collect and analyze data for this study are described in Part 2.2.5. Part 3.5 provides a general overview of land



use patterns in the area and briefly describes its social, economic, and recreational resources. Part 4.2 reports the results of interviews conducted in the area and evaluates each of the four options in terms of avoidance and exclusion areas.

2.2.5 Socioeconomic Resources

2.2.5.1 Data Collection

The criteria for exclusion and avoidance were formulated from the results of surveys conducted between October, 1981 and January, 1982. These surveys were also the source of the inventory of areas that meet those criteria. Those interviewed were either representatives of public agencies concerned with the administration of land in the area or local private landowners.

2.2.5.1.1 Public Agencies

Informal, unstructured interviews were conducted with representatives of the U.S. Fish and Wildlife Service, the Bureau of Land Management, the U.S. Forest Service, the Montana Department of Commerce, the Montana Department of Fish, Wildlife, and Parks, and the Montana Department of Natural Resources and Conservation. These interviews were used to evaluate socioeconomic resources in the study area and to obtain a general idea of areas the agency would recommend for avoidance from a socioeconomic perspective. The results of these interviews are presented in Part 4.2.2.

2.2.5.1.2 Private Land Owners

The concerns of landowners regarding transmission line construction and operation in the study area were determined by means of interviews conducted in person and by telephone, from October, 1981 to January 1982. The area was also inspected by two staff members who drove through as much of the area as was feasible during the months of October and November.

The interview process consisted of three stages, as follows.

Stage One. Personal interviews were conducted in mid-October with ten landowners or their employees--four in the Stanford area, one near Windham, and five in the Judith Gap area. These interviews were conducted on an informal basis but focused on the informant's concerns about transmission lines. These concerns were incorporated in the design of the interview guide used for the second stage of field work in November.

Stage Two. Twenty-five area residents were interviewed in or near their homes in mid-November. These people were identified as study area residents on the basis of "Detail Maps" provided by Fergus Electric Cooperative. Interviews were conducted with nine people in the area between Glengarry and Roundup, ten in the area between Glengarry and Judith Gap, and six between Glengarry and Windham or Stanford. In this second stage, the two interviewers introduced themselves as consultants evaluating possible new transmission line routes for the

Montana Power Company. To give the questions direct, personal relevance to the informant, without committing MPC to a particular route or corridor, the interviewers explained that "since the new line could pass through this area, we're asking some of the people who live here to comment." This statement was followed by a description of the general route, linking Glengarry to a substation south of Stanford, for example, and a brief attempt to convey to the respondent the size and general appearance of 100-kV lines typical of those already built in the Lewistown area. Informants were then asked whether any part of their property, or a specific area in the vicinity, could be affected by such a line, and where they thought the best route would be. Because informants in the first stage of field work had mentioned problems associated with existing transmission lines that crossed their property, informants in the second stage were asked whether any lines crossed their property. They were also asked whether they used a mechanical irrigation system, because potential problems with irrigation had been mentioned in the earlier interviews.

Stage Three. To determine whether the informants' concerns are generally characteristic of study area residents, a telephone survey was conducted during the first and second weeks of December 1981. The sample was drawn primarily from lists of Fergus Electric Cooperative customers and from a list provided by the MPC office in Lewistown. The objective was to include in the sample everyone in the study area whose property or residence was likely to be affected by the proposed transmission line. In practice, telephone numbers could not be found for all the customers on the Fergus Electric Cooperative lists, or for all the landowners whose names were supplied by the Lewistown MPC office. Many customers had multiple service connections and some evidently did not have telephones. Despite these problems, 400 individuals with telephone numbers were eventually listed, and of these 251 were interviewed (see Table 2.2.5.1-1). The 149 listed persons not interviewed included 34 who were reached but did not wish to comment, and 112 who either did not answer the telephone or did not actually live or own property in the study area.

Five interviewers, working during the evening and on weekends as well as during office hours, attempted to reach everyone on the list in December and January. They used a standard introduction, in which they identified themselves as employees of a consultant working for MPC. Each interview was prefaced with a statement about the general options, similar to the one used for the exploratory interviews done in November. The questionnaires consisted of an open-ended question about problems the line would cause if it crossed the respondent's property, followed by six questions designed to establish the size and type of property involved, whether mechanical irrigation was used on the property, and whether the respondent, or a neighbor, had an airfield or landing strip.

Respondents were then asked what recreational activity occurred in the immediate area, whether there were any scenic areas nearby, and finally, whether they knew of other areas that should be avoided. (See the Appendix for a facsimile of the questionnaire.)

Most of the respondents were male landowners, not necessarily residents of the property that might be affected. Sometimes an adult son or daughter, the spouse, or another relative was interviewed; sometimes an employee. (A record of the respondent's name and relationship to the landowner was kept but not coded as part of the interview data.)

The results of the 251 completed interviews are reported in Part 4.2.1.

TABLE 2.2.5.1-1
NUMBER OF POTENTIAL AND ACTUAL RESPONDENTS, BY AREA AND OPTION

<u>Area</u>	<u>Option</u>	<u>Number Listed</u>	<u>Number Interviewed</u>
Southeast	1	39	31
Heath-Grass Range	1	79	35
South of Lewistown	1	55	36
Moore-Moccasin	2,3	41	31
Northwest	2,3	92	54
Moore-Judith Gap	4	<u>94</u>	<u>64</u>
Total		400	251

Definition of areas:

Southeast:	North of Roundup and south and east of the Snowy Mountains, including Flatwillow Creek.
Heath-Grass Range:	South of Heath along the Red Hill Road, and east of Heath to Grass Range, including Forest Grove.
South of Lewistown:	Castle Creek, Casino Creek, and Cottonwood Creek.
Moore-Moccasin:	North and west of Moore, as far west as Moccasin.
Northwest:	West of Moccasin, including Utica, Windham, and Stanford.
Moore-Judith Gap:	South of Moore, including Beaver Creek, Crystal Lake Road, Garneill, and Judith Gap.

Source: Western Analysis, Inc.

2.2.5.2 Exclusion and Avoidance Criteria

The avoidance and exclusion areas shown on Exhibit 2.2.5-1 represent potential adverse effects of the proposed 100-kV transmission line on socioeconomic resources in the study area. The resources considered here include places defined by residents as scenic; recreation areas; existing communities; subdivisions, and other residential areas; land and equipment used for food production; and airports and private landing fields.

Exclusion areas were distinguished from avoidance areas on the basis of the severity of potential adverse impacts and the degree to which they are susceptible to mitigation or compensation. Exclusion areas are those in which the probable impact would be so severe, or so impervious to mitigation or compensation, that the proposed transmission line would be incompatible with existing use. Areas in which a transmission line would be prohibited by statute are also excluded. The specific areas recommended for exclusion are discussed in Part 4.5.3.

Avoidance areas are those in which the proposed transmission line may not be entirely compatible with existing land use, but the impact is susceptible to partial mitigation or compensation. A transmission line may be incompatible with sprinkler systems and other irrigation equipment, for example, but the impact can be mitigated through centerline selection. On rangeland and unirrigated cropland, the impact would be less severe, and landowners could be compensated for land taken out of production. Thus, irrigated land is designated as an avoidance area, and rangeland, as a non-avoidance area. These and other areas recommended for avoidance are discussed in Part 4.5.3.

Irrigated farmland was located by consulting Statewide Cooperative Land Use maps, supplemented by information from employees at the Moccasin Agricultural Experiment Station (Linhart, 1981) and by responses to the field and telephone surveys. Airports and private landing strips include those shown on the Montana VFR Aeronautical Chart distributed by the Aeronautics Division of the Montana Department of Commerce, and those reported in the field and telephone surveys. Recreation areas were listed in Montana Fish and Game, 1978, or reported by representatives of the Montana Department of Fish, Wildlife, and Parks and the U.S. Forest Service.

NOTE : Exhibit 2.2.5-1 referred
to above has been moved forward to
the main body of the permit
application by the Montana Power
Company. ^{See} Resource Map No. 6
in volume II

3.5 SOCIOECONOMIC RESOURCES

3.5.1 Description of the Environment

The study area is predominantly rangeland and cropland, the principal products being cattle, wheat, barley and hay (Fergus County USDA Committee for Rural Development, no date; Wheatland County USDA Committee for Rural Development, no date). Much of the southern portion of Fergus County is covered by pine and fir forests. This area and the northern part of Golden Valley County is part of Lewis and Clark National Forest, in the Big Snowy Mountains. The foothills north of the Big Snowy Mountains are cut by the canyons of Beaver Creek, Cottonwood Creek, Casino Creek, Castle Creek, and the Middle Fork of Big Spring Creek. Some suburban development has occurred in the lower or northern ends of these canyons, near Lewistown. The ridges between them are steep and mostly timbered.

Northwest of Roundup, flat, open rangeland extends from the Little Snowy Mountains to the Musselshell River. This country is used primarily for raising cattle and sheep. There is little irrigated cropland and little residential development. Just north and a little west of Roundup, a timbered ridge has been divided into 13-acre lots, some of which are occupied by trailers. The large basin south and east of Lake Mason is a producing oilfield.

The largest population centers in the study area are Lewistown (1980 population 7,104), Roundup (population 2,119), Stanford (population 595), Hobson (population 261), Moore (population 229), and Judith Gap (population 213). Lewistown is the commercial center for Judith Basin and Fergus counties.

A major two-lane highway, U.S. 87, links Stanford, Hobson, Moore and Lewistown to the state's largest cities, Great Falls and Billings, both approximately 110 miles distant. Judith Gap is on another federal highway, U.S. 191, which runs from Lewistown south to Interstate 90 at Big Timber. The study area is also traversed by a Burlington Northern freight line that runs from Great Falls to Billings, through Stanford, Hobson, and Judith Gap. The Lewistown Airport is served by Big Sky Airlines. There are small public airports at Roundup and Stanford, and private airstrips are scattered throughout the study area.

Electrical service in the study area is provided by MPC and the Fergus Electric Cooperative. The following MPC transmission facilities exist in the study area. 1) A 230-kV line runs from Billings to Great Falls, passing at least two miles from any population center. 2) A 100-kV transmission system extends from Harlowtown to Great Falls, passing near Judith Gap and through Stanford. A radial line extending from this facility at the Benchland substation to Glengarry completes the 100-kV system. 3) A 50-kV transmission system extends from Harlowtown to Glengarry to Lewistown to Stanford. Much of the electrical load in the study area is served by this system.

Fergus Electric Cooperative owns a 50-kV system which serves Hilger, Winifred, Roy, Grass Range, Winnett, and portions of the Roundup area. This facility begins near Lewistown and extends to Roundup.

Recreational activity in the study area consists of camping in the Snowy Mountains, and hunting, fishing, and snowmobiling throughout the study area. Designated public recreation sites include Crystal Lake in the Big Snowy Mountains; Ackley Lake, near Hobson; and the Jaycee Snowy Mountain Campground east of Lewistown (Montana Department of Fish and Game, 1978). A private association operates Camp Lewtana, on Mill Creek south of Lewistown. It consists of ten acres, with cabins. The Montana Department of Fish, Wildlife, and Parks has designated two fishing access sites on Spring Creek north of Lewistown.

Ackley Lake is a reservoir southwest of Hobson. The area comprises about 100 acres, with tables, fireplaces, and pit toilets. It is used for picnicking, fishing, boating, and water skiing. Visitation is estimated at 6700 for the 1981 season (May through September) and 7800 for the 1980 season (Hyppa, 1982).

The Department of Fish, Wildlife, and Parks operates the Big Springs Fish Hatchery southeast of Lewistown, producing about two million fish annually (Colley, 1982). Some of these fish are used to stock Ackley Lake. The fish hatchery is popular with local residents, tourists, and schoolchildren, though the superintendent could not estimate the annual number of visitors.

3.5.2 Field and Telephone Survey Respondents

Most of the thirty-five people interviewed in the field in October and November (Stage One and Stage Two) were selected for proximity to Glengarry substation or a possible substation site in Option 2, Option 3, or Option 4. Telephone survey respondents (Stage Three) were distributed more evenly over the study areas (see Table 2.2.5.1-1). About a quarter of them live or own property in the area between Glengarry and Judith Gap, southwest of Lewistown; about a third live or own property between Glengarry and the Stanford-Windham area to the northwest; and the rest are evenly divided among the canyons south of Lewistown, the area east of Lewistown between Heath and Grass Range, and the Flatwillow-Roundup area east and south of the Snowy Mountains.

Two-thirds of the telephone survey respondents operate a cattle or sheep ranch and raise grain or hay, usually both. Another 20 percent either ranch or farm, but not both. Only 36 respondents (14 percent) own a home or recreational property and do not use the land for agricultural production.

The distribution of the telephone survey sample by the approximate size of the respondent's landholding is shown in Table 3.5.2-1. Two-thirds of the sample possess more than a section of land (640 acres) and most of these people own at least a thousand acres. Large landholdings are more common in the northwest (Stanford-Windham) and southeast (Flatwillow-Roundup) areas than in the suburban area south of Lewistown, where one-third of the respondents own less than a quarter section.

TABLE 3.5.2-1 SIZE OF ACREAGE BY AREA
Telephone Survey

<u>Area</u>	<u>Percentage Distribution</u>				<u>Total</u>	<u>(No.)</u>
	<u>160 acres or less</u>	<u>161-640 acres</u>	<u>641-999 acres</u>	<u>1,000 acres or more</u>		
Southeast	7	7	0	86	100	(28)
Heath-Grass Range	38	9	3	50	100	(34)
South of Lewistown	33	28	8	31	100	(36)
Moore-Moccasin	8	31	0	62	101	(26)
Northwest	4	12	14	70	100	(50)
Moore-Judith Gap	12	17	14	56	99	(64)
All Areas	16	17	8	58	99	(238)

Note: See Table 2.2.5.1-1 for a description of the areas. Thirteen respondents declined to state the size of their acreage.

Source: Western Analysis, Inc.

4.2 Socioeconomic Resources

4.2.1 Survey Results

From the thirty-five personal interviews conducted in October and November, certain key issues emerged. Most of the informants are cattle ranchers who also raise hay and grain; a few specialize in hay or grain without livestock; and four are neither farmers nor ranchers. Everyone who farms expressed a preference for building the line across pasture rather than cropland, on the grounds that poles are troublesome to farm around and tend to be surrounded by "noxious weeds." Some also felt that MPC maintenance crews crossing their land would be a nuisance.

Ranchers in the Windham area were most likely to react negatively to the statement that a new 100-kV line might cross their property. In part this opposition was based on the fact that their land is, in most cases, already crossed by transmission lines. One landowner stated that the 230-kV line crossing her property had ruined it for "future resort development." Another rancher, on Sage Creek south of Windham, had had a problem with the Fergus Electric poles sinking in wet areas on his land, causing the lines to droop so low that he couldn't get his tractor under them. A rancher who owns 6,000 acres along Running Wolf Creek south of Stanford, including the proposed substation site for the Stanford Route, was strongly opposed to another transmission line. His property is crossed by five already, including the 230-kV line, and he felt that lines directly over his home and barns were dangerous.

In contrast, most landowners south of Heath and north of Roundup were undisturbed by the prospect of a new transmission line. No high-voltage line crosses this area at present. One rancher, owner of a 100,000-acre cattle ranch northwest of Roundup, said, "I don't object ecologically, it's just an economic proposition." He expected MPC to pay for an easement across his land, and he assumed that any damage would be adequately compensated.

Perhaps the strongest opposition to the proposed transmission line came from a man who operates an airfield on Crystal Lake Road, southeast of Moore. "You're not going to build any high voltage lines across my property. I'll fight you in the legislature, I'll take you to court." This man had buried his Fergus Electric service lines and was trying to persuade his neighbors to bury theirs. He suggested a distance of half a mile from the end of his--or anyone else's--runway as a good rule-of-thumb in locating transmission lines.

From these preliminary, unstructured interviews, it was apparent that most local residents were concerned first, about the possibility that the poles for the new transmission line would interfere with their farm machinery and irrigation equipment, and second, about the proximity of

the line to buildings, especially their own homes. Very few mentioned scenic areas or recreational use of the land, even when asked about potential adverse effects away from their own property.

The telephone survey confirmed that ranchers' and farmers' primary concern is with the loss of or damage to productive land. Respondents in the area crossed by existing high voltage transmission lines were most negative about the prospect of another one; their experience had been, as one man put it, that "you lose more land than you'd think."

All respondents were asked, "If this transmission line were to cross your property, would it cause any problems for you?" Of the 137 respondents who named at least one problem, ninety-four mentioned difficulty in cultivating or harvesting around the poles. Twenty said that a new transmission line would spoil their view or detract from the value of their property; nineteen mentioned weeds that tend to grow around the poles; and seventeen said they had too many poles or transmission lines already. Table 4.2.1-1 lists all the problems mentioned by at least three respondents.

Respondents in the northwest and Moore-Moccasin parts of the study area (Options 2 and 3) were more likely than anyone else to expect the proposed transmission line to cause problems if it crossed their land (Table 4.2.1-2). Over two-thirds of them mentioned at least one problem, compared with about half of those in the Option 4 area and 44 percent of those south and east of Lewistown (Option 1).

Respondents in the canyons south of Lewistown and in the Heath-Grass Range area east of Lewistown were most likely to say that there were too many poles in the area or to cite the expected visual effect of the proposed transmission line. In all other areas, crop production problems were by far the most often mentioned (see Table 4.2.1-2).

Respondents who ranched or farmed were more likely than others to expect the proposed transmission line to cause a problem (58 percent vs. 33 percent), but size of holding was not related to the percentage who mentioned problems.

Ranchers and farmers were much less likely than residential and recreation property owners to mention property values or effects on their view (6 percent vs. 22 percent), but none of the residential and recreational property owners thought that the new line would create a safety hazard.

Over half the sample (147) reported recreational activity in their immediate area, primarily fishing. Ninety-eight people reported fishing and snowmobiling; forty-five reported fishing only. Twelve people mentioned skiing. Only fifty-six respondents named, when asked, a "scenic area that MPC should avoid," and of these, twenty-six mentioned hills, Alaska Bench, or the Snowy Mountains. Nineteen mentioned water areas: Crystal Lake, Ackley Lake, the Judith River, Big Spring or

TABLE 4.2.1-1 EXPECTED PROBLEMS CAUSED BY PROPOSED TRANSMISSION LINE
Telephone Survey

	<u>Number</u>	<u>Percent of Sample</u>	<u>Percent of Those Expecting Problems</u>
Poles would make it hard to cultivate or harvest crops	94	37	69
Lines would spoil their view or detract from property value	20	8	15
Weeds would grow up around poles	19	8	14
Too many poles or lines on property or in area	17	7	12
Lines overhead or over buildings would create a hazard for people or livestock	13	5	9
Poles would interfere with irrigation	11	4	8
Lines would interfere with radio or television reception	5	2	4
Lines would interfere with aircraft	4	2	3
Guy wires could be broken by cattle	3	1	2
Other	4	2	3
<hr/>			
Number who expected one or more problems	137	55	100
Number who did not expect a problem	114	45	--
Total sample	251	100	--
<hr/>			

Note: Percentages sum to more than 100 because some of the respondents mentioned more than one problem.

Source: Western Analysis, Inc.

TABLE 4.2.1-2 EXPECTED TRANSMISSION LINE PROBLEMS BY AREA
Telephone Survey

<u>Area</u>	<u>Type of Problem Mentioned</u>				<u>Percentage of Respondents Who Mentioned Any Problem</u>
	<u>Crop Production</u>	<u>Property Value</u>	<u>Hazard</u>	<u>Other</u>	
Southeast	10	1	2	2	42
Heath-Grass Range	7	5	0	2	34
South of Lewistown	12	11	1	2	56
Moore-Moccasin	27	3	5	2	77
Northwest	35	9	7	3	65
Moore-Judith Gap	33	8	1	2	52
All Areas	124	37	16	13	55

Note: "Crop production" problems include poles interfering with cultivation, harvest, or irrigation, and weeds around poles; "property value" problems include spoiling the view, detracting from value and "too many" lines or poles; and "hazard" includes danger from lines overhead and stock breaking guy wires.

Source: Western Analysis, Inc.

Spring Creek, the East Fork Dam, and Sage Creek. Asked next about "other areas the company should avoid," fifteen respondents mentioned buildings, homes, or planned subdivisions; eleven mentioned farmland or feedlots; and nine mentioned scenic areas, lakes, rivers, or creeks.

Some of the study area residents interviewed during the preliminary field survey, and four respondents in the telephone survey, suggested that a high-voltage transmission line could create a hazard for aircraft. Asked specifically about landing fields on their property or in the immediate area, twenty-two respondents reported one on their property and forty-six, on a neighbor's property. Subsequent investigation showed that many respondents were referring to the same air field, and that some of the others were no longer in use. On Exhibit 2.5.2-1, twelve confirmed, active private landing fields are marked in addition to the seven shown on the Montana VFR Aeronautical Chart.

NOTE : Exhibit 2.2.5-1 referred
to above has been moved foward to
the main body of the permit
application by the Montana Power
Company. ^{see} Resource Map No. 6
in volume II

4.2.2 Concerns Expressed by Agency Representatives

Three federal agencies administer land in the study area: the Forest Service (USFS), the Bureau of Land Management (BLM), and the Fish and Wildlife Service (USFWS). The BLM administers several large tracts of rangeland northwest of Roundup and the Lewistown District Manager was asked about the potential adverse effects of a transmission line in the area. He reported that his office had not identified any areas that should be avoided (Freeman, 1981).

The USFWS administers the Lake Mason Wildlife Refuge northwest of Roundup. Lake Mason was dry in October and November, and the creeks that flow into it were nearly dry. The area is used primarily for grazing and has no immediate recreational value. As far as socioeconomic factors are concerned, the range is indistinguishable from the surrounding rangeland.

Two USFS representatives were questioned specifically about potential adverse effects in the Snowy Mountains. The Lewis and Clark National Forest Land Use Planner in Great Falls confirmed that the Big Snowy portion of the Forest is a Wilderness Study Area. The Little Snowy portion, on the other hand, is "good country to build a power line across," because it is rolling country, already cut by roads, and all of it is scheduled for timber harvest (Smith, 1981).

The District Ranger in the USFS office at Harlowton also said that the entire Little Snowy area would be harvested in a "105 to 120 year rotation," and that a transmission line probably would be compatible with USFS administration of the area. Further, no "high impact" recreation--only dispersed recreation, like hunting--takes place there (Fager, 1981).

A Montana Fish, Wildlife, and Parks representative stationed in Lewistown took a somewhat less optimistic view of the effects of transmission line construction on recreation in the Little Snowy Mountains. His concern was with wildlife habitat. Unless the line followed existing roads through the area, he said, deer, grouse, black bear, and turkey habitat would be disturbed; ultimately this would affect hunting in the area (Watts, 1981). According to this informant, most camping and hiking is done west of Red Hill Road (i.e., in the Big Snowy Mountains); snowmobiling is "not significant" in the Little Snowies; and recreation there is confined to hunting (spring and fall), fishing in the upper reaches of Flatwillow Creek, and firewood cutting.

Since private landing fields are fairly common in the area, the administrator of the Division of Aeronautics in the Montana Department of Commerce was asked whether and under what circumstances a transmission line could create a hazard for aircraft. He said that power lines could be a problem in a "traffic area," and that building

the line at least half a mile from the end of a runway would generally eliminate the hazard (Ferguson, 1981). All private airfields in the study area are marked "restricted," on the Montana VPR Aeronautical Chart, meaning that they are not for public use, that unreported hazards may exist, and that the user assumes all risk.

4.2.3 Evaluation of Options

4.2.3.1 Recommended Exclusion and Avoidance Areas

The only large area recommended for exclusion is the Big Snowy Mountain portion of the Lewis and Clark National Forest. This 91,342-acre area is designated as a Wilderness Study Area, awaiting final action by Congress (U.S. Department of Agriculture, 1977, p. 54, and BLM "Wilderness Status Map" of Montana, 1981). Construction of the proposed transmission line is not compatible with preservation of the area in its natural state and would be prohibited by law if the area becomes a Wilderness Area. The Big Snowy Mountains are therefore designated as an exclusion area.

Land within half a mile of the public airports at Stanford, Roundup, and Lewistown, and the nineteen private landing fields in the study area, is recommended for exclusion. The hazard to aircraft can be reduced by lighting or marking transmission lines in the vicinity of a landing field, but a line close to the end of a runway is generally incompatible with use by aircraft (Ferguson, 1981).

Designated recreation areas are recommended for exclusion on the grounds that in these small sites the proposed transmission line would detract substantially from the area's recreational value. All of these areas are used for outdoor recreation, in a more or less natural setting, and a 100-kV line would constitute a major intrusion (Colley, 1982; McBride, 1982; Sutton, 1982).

The largest area recommended for avoidance is the Little Snowy Mountain portion of the Lewis and Clark National Forest. While the proposed transmission line is not incompatible with most recreational uses of the Little Snowy Mountains (Fager, 1981), the fact that the area is used by the public means that such adverse effects as visual intrusions and loss of wildlife through habitat destruction could not be compensated as they could be on private land, though they could be mitigated by centerline selection.

The irrigated areas identified in this study are recommended for avoidance because the proposed transmission line may interfere with dams, sprinkler systems, and other irrigation equipment. The extent to which this interference could be reduced or eliminated by adjustments on the part of landowners would depend on the particular circumstances. But because some degree of mitigation is possible, irrigated areas are recommended for avoidance rather than exclusion.

Residential areas are recommended for avoidance on the basis of comments from people interviewed in the field and telephone surveys, to the effect that the proposed transmission line should be kept away from homes and other buildings. In this case the proposed transmission line is not necessarily incompatible with existing land use, but it is

defined socially as a significant intrusion. For most of the people, this concern is with the line's expected visual impact. A typical comment was, "I don't want to have to look at it in my front yard." A smaller number of people were concerned about property values, radio and TV interference, and a possible safety hazard.

Most of the private land in the study area is "non-avoidance," that is, not recommended for exclusion or avoidance. This does not mean that the proposed transmission line would have no impact. It would occupy a significant amount of land, and the poles could interfere with irrigation, cultivation, and harvesting of crops. Access to the line for maintenance purposes also would require land that otherwise would be used for food production, livestock, buildings, and so on. These effects, however, could be mitigated by routing the line along existing MPC right-of-way, along roads, property boundary lines, and fence lines. Only where mitigation or compensation is impossible or relatively difficult are areas recommended for avoidance or exclusion.

4.2.3.2 Comparative Evaluation of Options 1, 2, 3, and 4

Option 1 would involve relatively little irrigated land, few landing fields, and only two communities, Forest Grove and Grass Range. On the other hand, the largest single avoidance area, the Little Snowy Mountains, lies directly between Roundup and Glengarry. The Big Snowy Mountain Wilderness Study Area, recommended for exclusion, also presents a major obstacle.

Survey respondents in the area between Glengarry and the Little Snowy Mountains, and east of Lewistown, who could be affected by Option 1, were apt to see the proposed transmission line as a major intrusion. Coded responses to the "problems" question in the telephone survey do not capture the spirit of respondents' spontaneous comments. For example, one Castle Butte respondent described his area as "aesthetically outstanding" and said that other residents besides himself were voluntarily burying the telephone and power lines. Another respondent, living north of Heath, said that she "just flat refuses" to have a power line cross her land.

Under Option 2, the proposed transmission line would cross numerous irrigated areas on the Judith River and its tributaries. No other avoidance areas are likely to be involved under this option, though there are several landing fields between Glengarry and Stanford.

Irrigated land is most common in the area west of Lewistown, which would be affected by Option 3. The Judith River and several smaller streams cross this area too, and it also contains several private landing fields.

Respondents in the Moore-Moccasin and northwest areas were more likely than others to see the proposed transmission line as a source of problems, probably because many of them had had problems with existing transmission lines. This portion of the study area is relatively densely populated, containing many small communities and a popular recreation area at Ackley Lake.

Option 4, involving the area southwest of Glengarry, contains more irrigated land than the southeastern portion of the study area (Option 1) does, but less than the northwestern portion (Options 2 and 3). No major exclusion or avoidance areas were identified in this area. Only about half the telephone survey respondents in this area expected the proposed transmission line to cause problems if it crossed their land.

From the standpoint of socioeconomic resources, then, Option 4 offers the best opportunity for minimizing adverse impacts. Except for the Beaver Creek area near Glengarry, where there are wooded hills and some irrigated farmland, most of the terrain consists of relatively level ground, used mainly for dryland wheat farming and grazing.

Option 1, which also involves an area devoted primarily to livestock production and dryland farming, is ranked second best from the standpoint of socioeconomic resources. Landowner opposition in the areas closest to Lewistown would probably be greater than in the southwestern part of the study area, but the project would probably encounter very little resistance in the Flatwillow-Roundup area.

Option 2 is ranked next after Option 1, and Option 3 is ranked last. Both Option 2 and Option 3 would have more adverse impacts on socioeconomic resources than either of the other options, but if the proposed transmission line were built under Option 2, fewer irrigated areas and fewer towns would be affected. Landowner opposition would probably be somewhat stronger under Option 3 than under Option 2, since Option 3 would affect the Moore-Moccasin area, where more than three-quarters of the respondents expected the proposed transmission line to cause problems.

6.1.2 Literature Cited

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Wheatland County USDA Committee for Rural Development. No date. Situation Statement.

6.2.2 Personal Contacts

Brown, Bob. December 4, 1981. U.S. Fish and Wildlife Service, Billings. Telephone conversation.

Brown, Bob. December 7, 1981. U.S. Fish and Wildlife Service, Billings. Letter.

Colley, Emmett. January 21, 1982. Montana Department of Fish, Wildlife, and Parks. Telephone conversation.

Fager, Carl. December 1, 1981. U.S. Forest Service, Harlowton, Montana. Telephone conversation.

Ferguson, Mike. December, 1981. Montana Department of Commerce, Division of Aeronautics. Telephone conversation.

Freeman, Glenn. November 5, 1981. U.S. Bureau of Land Management. Letter.

Hyppa, Don. January 21, 1982. Montana Department of Fish, Wildlife, and Parks. Telephone conversation.

Linhart, Doug. November 19, 1981. Montana Agricultural Experiment Station, Moccasin. Personal conversation.

MacIntyre, Don. January 21, 1982. Montana Department of Natural Resources and Conservation. Telephone conversation.

McBride, Gene. January 21, 1982. Montana Department of Fish, Wildlife, and Parks, Big Springs Fish Hatchery. Telephone conversation.

Reinsel, Earl. December 4, 1981. U.S. Forest Service, Missoula. Telephone conversation.

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Storfa, Gail. October 16, 1981. Bureau of Land Management, Lewistown. Personal conversation.

Sutton, Eugene. January 19, 1982. Representative of the Camp Lewtana Association, Lewistown. Telephone conversation.

Thompson, Larry. December 4, 1981. Montana Department of Natural Resources and Conservation. Telephone conversation.

Tomlinson, Bud. October 15, 1981. U.S. Forest Service, Stanford, Montana. Personal conversation.

Watts, Bob. December, 1981. Montana Department of Fish, Wildlife and Parks, Lewistown. Telephone conversation.

APPENDIX

(1-3) Date Bank No.: _____
(4) Route: _____
(5-6) Immediate Area: _____

QUESTIONNAIRE FOR CENTRAL MONTANA STUDY, PHASE 1

TELEPHONE SURVEY

Procedure

Ask for the listed person, using first and last name ("Art Nelson", not "Mr. Nelson"). If the listed person is not at home, ask whether the speaker is the wife/husband. Interview may be conducted with a spouse, adult child, or sibling, but not a friend, employee, or child under age 20. Call back later if no adult relative is available.

Introduction

HELLO, IS THIS _____ ?

If no: MAY I SPEAK TO _____ ?

If listed person is not available, follow above procedure.

MY NAME IS _____. I'M CALLING FOR WESTERN ANALYSIS, A CONSULTING FIRM IN HELENA. WE HAVE A CONTRACT WITH MONTANA POWER COMPANY TO EVALUATE POSSIBLE ROUTES FOR A NEW TRANSMISSION LINE IN THE LEWISTOWN AREA. THE COMPANY IS CONSIDERING FOUR DIFFERENT ROUTES FOR THIS LINE, AND WE'RE ASKING YOU TO COMMENT BECAUSE YOUR PROPERTY MIGHT BE AFFECTED. DO YOU HAVE A FEW MINUTES NOW TO TALK ABOUT THIS?

If no: tell the respondent you have only a few questions to ask. Don't schedule a later call unless it's obvious that the respondent can't or won't talk now.

Interview

FIRST, I WANT TO BE SURE I'VE GOT THE RIGHT PERSON. DO YOU, OR DOES SOMEONE IN YOUR FAMILY, OWN PROPERTY IN THE _____ AREA?

Refer to area indicated on your list. If respondent says no, ask whether he/she knows anyone with the same last name who does own property in the _____ area.

If yes, get the full name and town of residence if possible, thank the respondent, and terminate interview. Add the new name to your list and ask directory assistance for the telephone number.

For respondents who do own property in the right area, go on to the next page.

1. ONE OF THE ROUTES BEING CONSIDERED FOR THE NEW TRANSMISSION LINE WOULD CONNECT THE EXISTING SUBSTATION AT GLENGARRY, NEAR LEWISTOWN, WITH A NEW SUBSTATION NEAR (STANFORD) (WINDHAM) (JUDITH GAP). THE NEW LINE WOULD BE A 100 KILOVOLT LINE ON WOODEN POLES.

IF THIS TRANSMISSION LINE WERE TO CROSS YOUR PROPERTY, WOULD IT CAUSE ANY PROBLEMS FOR YOU? _____ YES _____ NO

If yes: COULD YOU TELL ME SPECIFICALLY WHAT PROBLEMS IT WOULD CAUSE?

- (7) _____ Poles would interfere with irrigation
- (8) _____ Poles would make it hard to cultivate or harvest crops
- (9) _____ Weeds would grow up around poles
- (10) _____ Lines would interfere with aircraft
- (11) _____ Lines would spoil their view or other visual effect
- (12-15) _____ Other: _____
- _____
- _____

Note: Check or list every problem mentioned. Use last page to record additional comments.

- (16) _____ No problems mentioned: DO YOU GROW HAY OR OTHER CROPS ON YOUR LAND?
- _____ No
- _____ Yes: DO YOU USE A MECHANICAL IRRIGATING SYSTEM?
- _____ Yes _____ No

2. APPROXIMATELY HOW LARGE IS YOUR ACREAGE IN THE _____ AREA?

- (17-22) _____ ACRES

3. IS THIS ACREAGE USED MAINLY FOR RANCHING, OR FOR SOME OTHER PURPOSE? (Check as many as necessary)

- (23) _____ Ranching: DO YOU RAISE MAINLY CATTLE, SHEEP, OR HORSES?
_____ Cattle _____ Sheep _____ Horses _____ Other
- (24) _____ Farming: DO YOU GROW MAINLY WHEAT, SOME OTHER KIND OF GRAIN, OR SOMETHING ELSE?
_____ Grain _____ Other: _____
- (25) _____ Recreational property -- seasonal or weekend use
- (26) _____ Residential only
- (27) _____ Other: _____

4. If not already mentioned: IS THERE A LANDING FIELD FOR AIRPLANES ON THIS PROPERTY OR ANYWHERE ELSE IN THE IMMEDIATE AREA?

(28-29) _____ Yes: COULD YOU TELL ME WHERE IT IS, AND WHO OWNS IT?

_____ No

5. If not already mentioned: IS THERE ANY RECREATIONAL ACTIVITY IN YOUR AREA, SUCH AS SKIING, SNOWMOBILING, FISHING, OR HIKING?

(30-31) _____ Yes: WHAT KIND? _____
WHERE EXACTLY DOES THIS TAKE PLACE? _____

_____ No

6. If not already mentioned: ARE THERE ANY SCENIC AREAS NEARBY THAT THE COMPANY SHOULD AVOID IN BUILDING THIS TRANSMISSION LINE?

(32-33) _____ Yes: COULD YOU TELL ME WHERE THESE AREAS ARE?

_____ No

7. ARE THERE ANY OTHER PLACES IN YOUR AREA THAT THE COMPANY SHOULD AVOID?

(34-35) _____ Yes: PLEASE DESCRIBE THEM _____

_____ No

Additional Comments (identify by question number)

(36) _____ Interviewers Initials

